

WHAT IS CLAIMED IS:

1. In a system including a plurality of primary storage subsystems and a plurality of secondary storage subsystems that are connected to each other via a network, a method for remotely copying data from each of a plurality of primary volumes to a corresponding secondary volume from a plurality of secondary volumes, wherein the primary volumes are presented by the primary storage subsystems, and wherein the secondary volumes are presented by the secondary storage subsystems, the method comprising the steps of:
 - receiving, at each of the secondary storage subsystems, remote copy requests each of which is associated with a timestamp from at least one of the plurality of primary storage subsystems;
 - receiving, at each of the secondary storage subsystems, synchronizing requests each of which is associated with a timestamp from a corresponding primary storage subsystem;
 - determining, at each of the secondary storage subsystems, a first time as a first time parameter based on the timestamps included in the sync requests; and
 - determining, at each of the secondary storage subsystems, which remote copy requests to process based on the first time parameter and timestamps associated with the remote copy requests.
2. The method of claim 1, further comprising:
 - performing, at each of the secondary storage subsystems, write processing in accordance with remote copy requests that are associated with timestamps indicating a earlier time than the first time.
3. The method of claim 1, further comprising:
 - managing, at each of the secondary storage subsystems, a second time parameter for each of the primary storage subsystems; and
 - updating corresponding second time parameters at each of the secondary storage subsystems in response to whether timestamps associated with the sync requests indicate a later time than the corresponding second time parameters of the second storage subsystems.

4. The method of claim 3, wherein the first time is the earliest time indicated by the second time parameters.
5. The method of claim 1, further comprising:
 - determining a second time with which the secondary storage subsystems are synchronized based on the first time determined by the secondary storage subsystems.
6. The method of claim 5, further comprising:
 - changing, at each of the secondary storage subsystems, the first time parameter to the second time.
7. The method of claim 5, wherein the second time is determined when the remote copying is suspended.
8. A software system for remotely copying data from each of a plurality of primary volumes to a corresponding secondary volume from a plurality of secondary volumes implemented in a data storage system that includes a plurality of primary storage subsystems and a plurality of secondary storage subsystems that are connected to each other via a network, wherein the primary volumes are presented by the primary storage subsystems, and wherein the secondary volumes are presented by the secondary storage subsystems, the software system comprising:
 - means for receiving, at each of the secondary storage subsystems, remote copy requests which are each associated with a timestamp from at least one of the plurality of primary storage subsystems;
 - means for receiving, at each of the secondary storage subsystems, synchronizing requests which are each associated with corresponding timestamps from corresponding primary storage subsystems;
 - means for determining, at each of the secondary storage subsystems, a first timer as a first time parameter based on the timestamps included in the sync requests;
 - and

means for determining, at each of the secondary storage subsystems, which remote copy requests to process based on the first time parameter and timestamps associated with the remote copy requests.

9. The software system of claim 8, further comprising:

means for write processing, at each of the secondary storage subsystems, in accordance with remote copy requests that are associated with timestamps indicating a earlier time than the first time.

10. The software system of claim 8, further comprising:

means for managing, at each of the secondary storage subsystems, a second time parameter for each of the primary storage subsystems, and for updating the corresponding second time parameters in response to timestamps associated with the sync requests that indicate a later time than corresponding second time parameters of the second storage subsystems.

11. The software system of claim 10, wherein the first time is the earliest time indicated by the second time parameters.

12. The software system of claim 8, further comprising:

means for determining a second time with which the secondary storage subsystems are synchronized based on the first time determined by the secondary storage subsystems.

13. The software system of claim 12, wherein said determining means is further formed to change, at each of the secondary storage subsystems, the first time parameter to the second time.

14. The software system of claim 12, wherein said determining means is further formed to determined the second time when the remote copying is suspended.

15. In a system for remotely copying data from each of a plurality of primary volumes to a corresponding secondary volume from a plurality of secondary volumes

implemented in a data storage system that includes a plurality of host computers, a plurality of primary storage subsystems and a plurality of secondary storage subsystems, all connected to each other via a network, wherein the primary volumes are presented by the primary storage subsystems, and wherein the secondary volumes are presented by the secondary storage subsystems, each of the host computers implementing said system that comprises:

means for receiving, at each of the secondary storage subsystems, remote copy requests which are each associated with a timestamp from at least one of the plurality of primary storage subsystems;

means for receiving, at each of the secondary storage subsystems, synchronizing requests which are each associated with corresponding timestamps from corresponding primary storage subsystems;

means for determining, at each of the secondary storage subsystems, a first timer as a first time parameter based on the timestamps included in the sync requests; and

means for determining, at each of the secondary storage subsystems, which remote copy requests to process based on the first time parameter and timestamps associated with the remote copy requests.

16. In a system according to claim 15, further comprising:

means for write processing, at each of the secondary storage subsystems, in accordance with remote copy requests that are associated with timestamps indicating a earlier time than the first time.

17. In a system according to claim 15, further comprising:

means for managing, at each of the secondary storage subsystems, a second time parameter for each of the primary storage subsystems, and for updating the corresponding second time parameters in response to timestamps associated with the sync requests that indicate a later time than corresponding second time parameters of the second storage subsystems.

18. In a system according to claim 17, wherein the first time is the earliest time indicated by the second time parameters.

19. In a software system according to claim 15, further comprising:
means for determining a second time with which the secondary storage subsystems are synchronized based on the first time determined by the secondary storage subsystems.
20. In a system according to claim 19, wherein said determining means is further formed to change, at each of the secondary storage subsystems, the first time parameter to the second time.
21. In a system according to claim 19, wherein said determining means is further formed to determine the second time when the remote copying is suspended.